

REMARKS

This is in full and timely response the Office Action dated December 14, 2005.
Reexamination in light of the following remarks is respectfully requested.

Claims 1-20 are currently pending in this application. *No new matter has been added.*

Claim objections

Paragraph 1 of the Office Action indicates an objection to claims 10-18.

This objection is traversed at least for the following reasons.

While not conceding the propriety of this objection and in order to advance prosecution of the above-identified application, the claims have been amended.

Withdrawal of this objection is respectfully requested.

Rejection under 35 U.S.C. §112, second paragraph

Paragraph 3 of the Office Action indicates a rejection of claims 3, 6, 7, and 9 under 35 U.S.C. §112, second paragraph.

This rejection is traversed at least for the following reasons.

While not conceding the propriety of this rejection and in order to advance prosecution of the above-identified application, the claims have been amended.

Withdrawal of this rejection is respectfully requested.

Rejection under 35 U.S.C. §103

At least for the following reasons, if the allowance of the claims is not forthcoming at the very least and a new ground of rejection made, then a **new non-final Office Action** is respectfully requested.

Paragraph 10 of the Office Action indicates a rejection of claims 1-20 under 35 U.S.C. §103 as allegedly being obvious over U.S. Patent No. 5,396,072 to Schiebel et al. (Schiebel) in view of U.S. Patent No. 6,251,701 to McCandless.

This rejection is traversed at least for the following reasons.

The paragraph beginning at page 11, line 12, of the specification as originally filed provides that:

A radiation detector 1 includes a supporting substrate 3 having permeability to radiation, a common electrode 5 for bias charge application formed on the bottom surface of the supporting substrate 3, a hole injection preventing layer 7 on the bottom side of the common electrode 5, a detection layer 9 which generates electron-hole pair carriers in response to incident radiation, an electron injection preventing layer 11 formed on the bottom surface of the detection layer 9, and a detection electrode 13 for collecting carriers, all of which are laminated.

This portion of this specification has been identified merely for illustrative purposes and is not intended to limit the scope of the invention.

Schiebel - Schiebel arguably teaches an X-ray image detector.

The Office Action contends that Schiebel teaches a detection layer comprising CdTe that is doped with Cl (Office Action at page 5).

Schiebel arguably teaches that semiconductor layer 31 may consist of various materials, for example HgI_2 , CdSe , CdTe , PbO or Se , whose conductivity is adjusted in the above sense by given additions (Schiebel at column 5, lines 33-35). This is obtained, for example by means of a selenium layer having a thickness between 1 and 5 μm , doped with from 20 to 200 ppm Cl (Schiebel at column 5, lines 35-37).

However, Schiebel fails to teach semiconductor layer 31 as being a detection layer. Instead, Schiebel arguably teaches that first there is provided a semiconductor layer 31 which is substantially not conductive for negative charge carriers, but conducts positive charge carriers so much the better (Schiebel at column 5, lines 29-33). It appears that the invention of Schiebel merely discloses doping in order to form a band gap.

Moreover, Schiebel fails to teach semiconductor layer 31 as being a polycrystal film

Schiebel arguably teaches that semiconductor layer 35 is formed by a selenium layer which, like the layer 31, is doped with from 20 to 200 ppm Cl , but is thicker than the layer 31 of FIG. 3, for example from 5 to 40 μm (Schiebel at column 6, lines 60-63).

However, Schiebel fails to teach semiconductor layer 35 as being a detection layer. Instead, Schiebel arguably teaches that on the insulating layer 13 there is provided a semiconductor layer 35 which does not conduct the negative charge carriers but which has a suitable conductivity for positive charge carriers (Schiebel at column 6, lines 56-60). It appears that the invention of Schiebel merely discloses doping in order to form a band gap.

Moreover, Schiebel fails to teach semiconductor layer 35 as being a polycrystal film

Additionally, the Office Action admits that Schiebel fails to disclose, teach or suggest the details of how the detector layer is formed (Office Action at page 5).

Moreover, Schiebel fails to disclose, teach or suggest that an atmosphere of the heat treatment contains at least one of N_2 , O_2 , H_2 , He , Ne , and Ar .

McCandless - McCandless arguably teaches an all-vapor processing of p-type tellurium-containing II-VI semiconductor and ohmic contacts thereof.

Figure 1 of McCandless arguably teaches that a deposition 12 of CdS and CdTe films onto a glass substrate occurs (McCandless at column 3, lines 58-59).

Figure 1 of McCandless arguably teaches that the film is then subjected to a CdCl₂ vapor heat treatment 16 (McCandless at column 3, lines 60-61).

McCandless arguably teaches the presence of a reactant solid containment region 122 to contain reactant solids (McCandless at Figure 2, column 4, lines 16-17).

McCandless arguably teaches that, for example, during the cadmium chloride treatment phase, heating of the reaction zone susceptors can be stopped or otherwise changed to cease any further vaporization of the cadmium chloride powder (McCandless at column 4, lines 33-37).

Column 4, lines 55-63 of McCandless arguably teaches that typical operation conditions for the cadmium chloride vapor treatment step are as follows:

Temperature of the CdTe = 420 °C;

Temperature of the CdCl₂ = 415 °C;

Reaction Time=20 minutes;

Ambient Gas=Dry Air;

Flow Rate=1 L/min; and

Total Pressure=760 Torr.

However, McCandless fails to disclose, teach or suggest that an atmosphere of the heat treatment contains at least one of N₂, O₂, H₂, He, Ne, and Ar.

Moreover, *prima facie* obviousness of a claimed invention is established “only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.” *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. *In re Rouffet*, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998).

Whereas Schiebel arguably teaches an x-ray detector, McCandless arguably teaches a method for producing solar cells. That McCandless may arguably teach an all-vapor processing of p-type tellurium-containing II-VI semiconductor and ohmic contacts thereof does not render the claims obvious when there is no suggestion of using the p-type tellurium-containing II-VI semiconductor in substantially the same manner as the layers found within Schiebel. See, for example, *In re Dillon*, 13 USPQ2d 1337, 1342 (Fed. Cir. 1989), and M.P.E.P. §2143.01, section “*The Proposed Modification Cannot Change The Principle Of Operation Of A Reference.*”

Withdrawal of this rejection and allowance of the claims is respectfully requested.

Conclusion



For the foregoing reasons, all the claims now pending in the present application are allowable, and the present application is in condition for allowance. Accordingly, favorable reexamination and reconsideration of the application in light of the amendments and remarks is courteously solicited.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone Brian K. Dutton, Reg. No. 47,255, at 202-955-8753.

If any fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013.

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Respectfully submitted,

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